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Medical and Non-Medical Predictors of Disability Discharge Disposition
for Navy Personnel with a Back Problem: A Focus on Entitlement

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Summary

Problem

In recent years there has been an effort to curb the growing costs of medical care in both the private and public sectors. Two areas of concern to the U.S. Navy are worker compensation costs and disability retirement costs resulting from the back problems of active duty, enlisted personnel. While the U.S. Navy has launched a major educational program to help prevent back problems, little attention has been directed toward understanding back-related medical costs which are legally awarded as benefits to military employees.

Objective

The purpose of this study was to examine the extent to which severity of back problem and length of service predict medical discharge disposition (i.e., severance pay versus temporary disability retirement) and the extent to which medical discharge disposition can be explained in terms of attributions of entitlement.

Approach

The approach of this study was to analyze computer data regarding the type of medical disability discharge awarded by Physical Evaluation (PE) Boards to active duty, enlisted Navy personnel with a back problem, in relation to length of service, paygrade, severity of back problem, and presence of a secondary diagnosis. The sample (N=3,842) consisted of all incidences of PE Board dispositions of either severance pay or temporary disability retirement between 1974 and 1983, inclusive; these incidences represented only active-duty, enlisted Navy personnel who had been hospitalized with a back problem as the primary diagnosis

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Findings

Results indicated that the medical discharge dispositions of Navy PE Boards were related primarily to length of service (i.e., the twenty-year rule) and severity of back problem. These findings are consistent with PE Board regulations, and have implications for understanding both formal attributions of entitlement by PE Boards and for calculating total costs of medical problems of active duty, enlisted Navy personnel.

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Introduction

In recent years there has been an effort in both the private and public sectors to curb the growing costs of medical care. Two areas of particular concern to the U.S. Navy are worker compensation costs and disability retirement costs resulting from the back problems of active duty, enlisted personnel. For example, in 1987 back problems accounted for one third of the Navy's worker compensation costs (Mantel, 1988), and between 1974 to 1983, inclusive, approximately 18% of all active duty, enlisted Navy personnel who had been hospitalized with a back problem as the primary diagnosis later received either severance pay or temporary disability retirement. While the U.S. Navy has launched a major educational program to help prevent back problems, little attention has been directed toward understanding back-related medical costs which are legally awarded as benefits to military members.

Navy Physical Evaluation (PE) Boards are responsible for determining eligibility and amount of award for disability. For example, Navy PE Boards are required to consider both severity of medical condition and length of service in their determination of temporary disability retirement. Two of the basic criteria considered by PE Boards are that an individual must have a 30% level of disability and/or 20 years of service creditable for retirement in order to receive temporary disability retirement as opposed to severance pay (SECNAVISNT 1850.4B [7 Dec. 87], Appendix B-SS 1201, SS 1202, SS 1203, SS 1204, SS 1206). Disabled Navy personnel with 20 years of service creditable for retirement do not receive, however, disability compensation from the U.S. Navy; rather, they are awarded a tax exemption on their military retirement which is equivalent to the percent level of disability established (e.g., a

30% disability signifies a 30% tax exemption). Medical costs in the case of 20-year veterans, then, are compounded by the loss of tax revenues to the U.S. Government.

The manner in which Navy PE Boards determine a temporary disability award is relevant to several social psychological issues. First, according to social observation theory of self-perception (Kilbourne, in press), individuals generally observe and evaluate themselves in relation to normative expectations and social standards, and, consequently, the self cannot be fully understood apart from our relationships with others or the social context (Mead, 1934; McCall and Simmons, 1966; Stryker and Gottlieb, 1981). Individuals are not limited to reflecting retrospectively about their behavior in the absence of external restraints (i.e., when there are no normative expectations or social standards) and only then inferring internal dispositions or traits (Bem, 1962, 1970). Self-attributions may occur before, after, or concurrent with relevant behavior. Social observation theory, then, can help to explain how Navy regulations serve as the basis for certain individuals to attribute entitlement to themselves and others.

Second, interdependence theorists argue that individuals assess situations in terms of given outcomes and effective outcomes (Kelley & Thibaut, 1978). Given outcomes are actual distributions of some valued commodity, and effective outcomes are a person's perception or attributional explanation of given outcomes. The attribution of entitlement may be an effective outcome that cognitively mediates an individual's behavior in a particular situation (e.g., who deserves what and why). For example, in relation to Navy PE Boards, attributions of entitlement seem germane to understanding the justification of the 20-year criterion regarding eligibility for a disability award. Interestingly, perceptions of fairness have been found to be related to both the distribution of outcomes and the evaluations of procedures leading to those outcomes (Nacoste, 1987; Thibaut & Walker, 1975; Walker & Lind, 1984). The attribution of entitlement, therefore, has implications for understanding perceived Navy fairness.

The purpose of the study reported herein was to examine the type of medical disability discharge (i.e., severance pay versus temporary disability retirement) awarded to active duty, enlisted Navy personnel with a back problem, in relation to length of service, paygrade, severity of back problem, and the presence of a secondary diagnosis. It was expected that two of the basic criteria used by Navy PE Boards to award temporary disability retirement --severity of medical problem and length of service--would predict the type of medical disability discharge awarded. It was also expected that any systematic pattern of disability discharge dispositions by Navy PE Boards could be understood in terms of attributions of entitlement.

Methods

Subjects

The sample (N=3,842) consisted of all incidences of Physical Evaluation Board dispositions of either severance pay or temporary disability retirement between 1974 and 1983, inclusive; these incidences represented only active-duty, enlisted Navy personnel who had been hospitalized with a back problem as the primary diagnosis. Data were obtained from the Navy Enlisted Career/Medical History File (NECMHF). NECMHF is based on two compiled files. One is the Service History File, which consists of demographic and military-service history data from Navy Military Personnel Command in Arlington, Virginia. The other is the Medical History File, which contains hospitalization, death, Medical Board action, and Physical Evaluation Board action data from Naval Medical Data Services Center in Bethesda, Maryland. NECMHF is compiled and maintained by the Naval Health Research Center, San Diego, CA. (Garland, Helmkamp, Gunderson, et al., 1987).

Coding

Two orthopedists and one anesthesiologist rank-ordered the medical severity of nine back-problem diagnoses (all Spearman rho coefficients $>.77$, all p values $<.01$).² The rank orderings were collapsed into the following ordinal levels of severity of back problem: 1) mild severity--open back wound, sprain or strain of the sacroiliac region, and sprain or strain of other or unspecified back part; 2) moderate severity--affection of the sacroiliac joint, vertebrogenic pain syndrome, and fracture or fracture-dislocation of the vertebral column without spinal cord lesion; and 3) high severity--displacement of an intervertebral disc, fracture or fracture-dislocation of the vertebral

column with spinal cord lesion, and spinal cord lesion without evidence of spinal bone injury. Additionally, one measure was treated as a nominal variable, and three measures were treated as ordinal variables, respectively: a) presence of secondary diagnosis (yes versus no), b) medical discharge disposition (severance pay [i.e., a one-time benefit] versus temporary disability retirement [i.e., an extended benefit]), c) paygrade (E1, E2-E4, E5-E6, and E7-E9), and d) length of service (less than 20 years versus 20 years or more).

Results

Chi Square analyses (all p values $<.0001$) indicated that type of medical discharge disposition was significantly related to length of service (Kendall's tau-b [t_b] = .50, $p < .0001$), paygrade (t_b = .36, $p < .0001$), and severity of back problem (t_b = .12, $p < .0001$).³ Using the partial tau-b procedure to control for a third variable, the relationship between length of service and medical discharge disposition remained, for all practical purposes, unchanged (see Agresti & Agresti, 1979; Blalock, 1979) when controlling for severity of back problem (tau-b- bar [\bar{t}_b] = .52) and presence of secondary diagnosis (\bar{t}_b = .48). The relationship between paygrade and medical discharge disposition remained similarly unchanged when controlling for severity of back problem (\bar{t}_b = .37) and presence of secondary diagnosis (\bar{t}_b = .31). And the relationship between severity of back problem and medical discharge disability remained essentially unchanged, for all practical purposes, when controlling for presence of secondary diagnosis (\bar{t}_b = .09) and paygrade (\bar{t}_b = .10).

However, the analyses also indicated several interactions. The relationship between length of service and medical discharge disposition was weakened by 48% when controlling for paygrade (\bar{t}_b = .26). The relationship between paygrade and medical discharge disposition was weakened by 56% when controlling for length of service (\bar{t}_b = .16). Thus, both associations with medical discharge disposition remained positive after controlling for the other, although the association between length of service and medical discharge disposition reduced less and remained considerably stronger. It appears, therefore, that length of service and paygrade tap statistically the same dimension, and that length of service taps that dimension better (Blalock, 1979). In addition to the above interactions, there was a substantially weaker relationship (i.e., a 75% reduction in the magnitude of the association) between severity of back

problem and medical discharge disposition when controlling for length of service ($\bar{r}_b = .03$). Table 1 shows the effect of the control variables on the relationship between the predictor variables and medical discharge disposition.

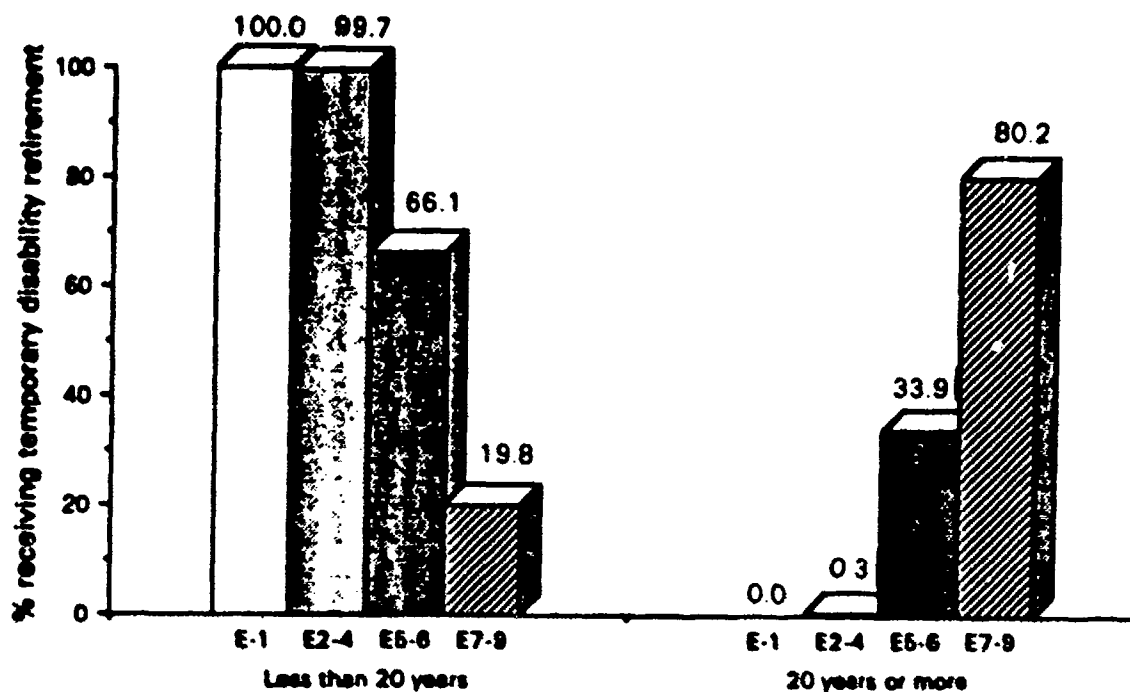
Table 1
Effect of Control Variables on Relationships of
Medical Discharge Disposition with Predictor Variables^a

		Control Variables			
		Severity of Diagnosis	Presence of Secondary Diagnosis	Paygrade	Length of Service
Severity of Diagnosis	.12	--	.09	.10	.03
Paygrade	.36	.37	.31	--	.16
Length of Service	.50	.52	.48	.26	--

^aAll table values represent tau-b coefficients of Medical Discharge Disposition with the row (predictor) variables.

A close inspection of the partial-association tables clarified the nature of these interactions. First, the interaction between length of service, medical discharge disposition, and paygrade can be explained by the fact that paygrade levels E5 and above were more likely than lower paygrade levels to have twenty years of service creditable for retirement and could, therefore, benefit from the 20-year rule. More specifically, this interaction indicated:

- 1) an inverse relationship between paygrade and percent receiving temporary disability retirement for those with less than twenty years of service, and
- 2) a positive, linear relationship between paygrade and percent receiving temporary disability retirement for those with twenty years or more of service (Figure 1).



Length of service

Fig 1 Interaction between temporary disability retirement and length of service controlling for paygrade

Second, the interaction between severity of back problem, medical discharge disposition, and length of service indicated that severity had a positive, linear effect upon medical discharge disposition for individuals with less than twenty years of service but not for individuals with twenty years or more of service (Figure 2). Individuals with twenty years of service creditable for retirement (i.e., the 20-year rule) received temporary disability retirement independent of the severity of their back problem while those with less than twenty years generally received temporary disability retirement as a function of the severity of their back problem (i.e., the severity rule). The two above interactions were consistent with one another and were indicative of the importance of the 20-year rule.

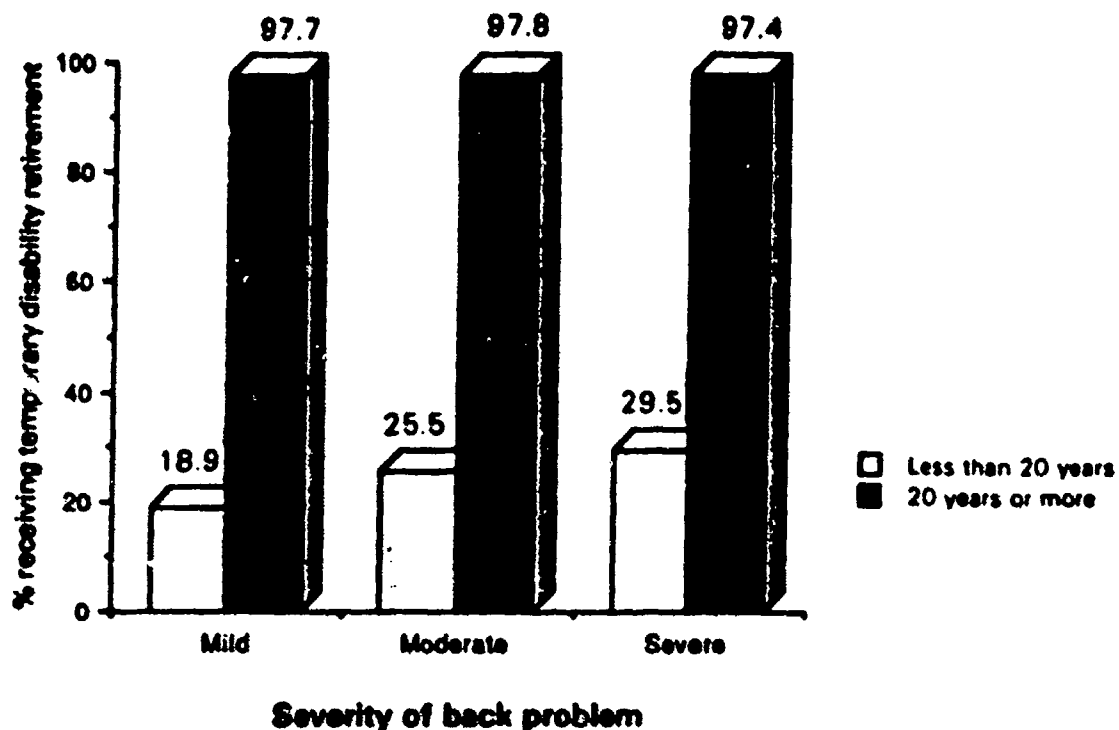


Fig. 2. Interaction between temporary disability retirement and severity controlling for length of service.

A loglinear analysis (logit) was then conducted to compute parameter estimates and to assess, using two-tailed Z tests, any interaction and contrast effects within levels of the variables. Logit is a modified regression procedure for categorical data (Goodman, 1972; Knoke & Burke, 1980). The logit model indicated a perfect fit with the data (Likelihood Chi Square = .0000, $p=1.00$) and included the following variable entries: medical discharge disposition alone and medical discharge disposition by length of service. The concentration measure of association, which is analogous to Goodman and Kruskal's tau-b and which indicates the strength of the association between the dependent variable (i.e., medical discharge disposition) and the predictor variable (in this case, length of service), was .25. (Haberman [1982] cautions, however, that the concentration measure may underestimate the magnitude of association in the model.) Thus, medical discharge disposition and length of service were moderately and positively associated. A simple contrast confirmed that active duty, enlisted Navy personnel with twenty years of service creditable for retirement were more likely to receive temporary retirement disability than Navy personnel with less than twenty years of service ($p<.001$).

Discussion

The present study found that severity of back problem and length of service significantly predicted the type of medical discharge awarded by Navy Physical Evaluation Boards to active duty, enlisted Navy personnel with a back problem. That finding was completely consistent with two of the basic criteria considered by Navy PE Boards in their determination of medical disability award (i.e., the 30%- or severity rule and the 20-year rule). Thus, Navy Physical Evaluation Board regulations can be seen as the basis by which Board members attributed entitlement to these applicants.

Conceptualizing entitlement attributions as an effective outcome is one useful way, according to interdependence theory (Kelley & Thibaut, 1978), to understand how some Navy personnel interpret the actual distribution of a valued commodity. That is, the concept of attributing entitlement can explain why some Navy personnel qualified for and received a retirement benefit and others did not. Entitlement attributions can also be hypothesized as impacting on the perceived fairness of Navy procedures used to determine a medical discharge disposition (Nacoste, 1987; Thibaut & Walker, 1975; Walker & Lind, 1984). For example, in the present study, the statistical analyses indicated that individuals with less than twenty years of service were treated similarly under the severity rule and individuals with twenty years or more of service were treated similarly under the 20-year rule. There was no indication of preferential treatment as a function of paygrade level within this rule framework. Rather, the severity rule of awarding disability compensation was more determinant for individuals with less than twenty years of service while the 20-year rule of awarding disability compensation was more determinant for those with twenty years or more of service.

Another useful way to conceptualize attributions of entitlement is from the standpoint of social observation theory of self-perception (Kilbourne, in press), although attributions of self-entitlement were not directly measured in the present study and can only be inferred from the present pattern of results. Navy personnel have access to Physical Evaluation Board regulations concerning the awarding of severance pay versus temporary disability retirement. Individuals with knowledge of such regulations have the clear opportunity, then, to use Navy regulations as a normative standard for making self-attributions of entitlement and for seeking retirement compensation. Bem's

(1962, 1970) conception of self-perception--an individual first acts and then draws inferences about the type of person he is or is not--cannot explain such rule-governed behaviors and rule-related self-attributions. Individuals in certain highly rule-structured situations are not discovering themselves after engaging in some behavior per se; rather, before they act, they are oftentimes proclaiming themselves as entitled or possibly entitled to something relative to a particular rule or norm, and no doubt reiterate their entitlement attributions many times along the way to achieving their final goal.

It is noteworthy that the present conceptualization of attribution of entitlement is new to the attribution literature, and probably applies to situations other than those involving the awarding of retirement benefits. Entitlement attributions may be important in understanding self change in such diverse situations as social movements and psychotherapy. For example, attributions of victimization, entitlement, and empowerment seem relevant to explaining changes in self perceptions that occur for individuals who seek equal rights by joining a social movement (e.g., the women's movement, the civil rights movement, the tax relief movement) or who seek psychotherapy as a means to assuage the lingering effects of trauma experienced in childhood (e.g., from physical or sexual abuse). The specific attribution of entitlement may be a necessary motivational step for such individuals to try to change themselves and their life situations.

A further implication of the present study concerns the calculation of costs to the U.S. Government that result from the back problems of active-duty, enlisted Navy personnel. Given the 20-year criterion, the costs of a primary-diagnosis back problem are potentially compounded beyond loss of work time, worker compensation costs, outpatient and/or inpatient costs, and administrative costs, to include the costs accrued as a result of the loss of tax revenue to the U.S. Government. Costs of entitlement should be considered in addition to medical and administrative costs when attempting to assess the total costs of a medical problem to active-duty, enlisted Navy personnel. The present back-education program by the U.S. Navy, as a way to reduce the likelihood and consequences of back problems to active-duty, enlisted Navy personnel, can produce entitlement-related savings as well.

Footnotes

- ¹ Brock Kilbourne is a Research Associate with the National Research Council, National Academy of Sciences.
- ² The nine back problem diagnoses were general categories or headings for a combination of specific, related codes from the ICDA-8, ICD-9, and DDDIC. The strategy of combining similar codes under a general heading facilitated comparison of different diagnostic categories, although it also probably reduced the degree of agreement between raters and the strength of the relationship between severity of back problem and type of medical disability discharge.
- ³ Kendall's tau-b has a proportional reduction in error interpretation and can be used to compute a summary partial tau-b measure (tau-b-bar) to control for third variables of any scale (Agresti, 1977; Agresti & Agresti, 1979).

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